STATE OF INDIANA

OPERATIONAL PROCEDURES REFERENCE GUIDE

FOR THE

IN-SAVE COALITION

POST- DISASTER STRUCTURAL ASSESSMENT *AND* VISUAL EVALUATION GUIDE *FOR* VOLUNTEER PROFESSIONALS

2008

STATE OF INDIANA

OPERATIONAL PROCEDURES REFERENCE GUIDE

FOR THE

IN-SAVE COALITION

Post-Disaster Structural Assessment and Visual Evaluation
Guide for Volunteer Professionals

2008

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PREFACE

Due to the continuing threat of disaster to the State of Indiana: earthquake, wind, fire, flooding events as well as man-made disasters; there is the need for a plan to assist state and local governments in making decisions regarding the continued use and occupancy of buildings determined to be essential facilities within their jurisdictions. Following catastrophic events, unsafe buildings of all types pose a serious threat to their occupants. Critical facilities such as police, fire, health care, shelters, hotels, as well as other essential facilities and high occupancy buildings are priority locations that are critical to the recovery of a community from catastrophic disasters. The Indiana Structural Assessment and Visual Evaluation **(IN-SAVE)** Coalition consists of trained and qualified volunteer engineers, architects and other qualified personnel. Following a disaster, these volunteers assist the Indiana Department of Homeland Security (IDHS) in the assessment of the safety for use, or if entry should be restricted for buildings defined as essential facilities by IDHS and the Federal Emergency Management Agency (FEMA) guidelines.

The IN-SAVE Coalition initially includes the following organizations:

- **Indiana Department of Homeland Security**
- **Purdue University School of Civil Engineering**
- **American Society of Civil Engineers, Indiana Chapter**
- **American Institute of Architects, Indiana Chapter**
- **Indiana Structural Engineers Association**
- **Indiana Society of Professional Engineers**
- **American Council of Engineering Companies of Indiana**

The IN-SAVE Coalition objective is to assist IDHS in the execution of its responsibilities through the use of qualified volunteers in the on-the-spot assessment of buildings determined to be essential facilities following catastrophic events.

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Purpose

The purpose of this reference guide is to provide a resource that defines building evaluation procedures, organizational structure and the course of action for qualified professional volunteer engineers, architects and other qualified volunteers to assist the Indiana Department of Homeland Security (IDHS) and local jurisdictions in evaluating the safety of structures defined as essential facilities by IDHS for the IN-SAVE program immediately after natural or man-made disasters.

1.2 General Information

The Indiana Structural Assessment and Visual Evaluation Coalition (IN-SAVE) is a cooperative effort involving IDHS, Purdue University School of Civil Engineering and representatives from various engineer and architect professional organizations and other interested groups and associations.

The Indiana Department of Homeland Security, with the assistance of the Purdue University School of Civil Engineering, will establish and administer an emergency volunteer program to be activated in the event of a catastrophic natural or man-made disaster. If available, volunteers agree to provide their services up to 3 consecutive days as requested by IDHS. Depending on the duration of the event, and completing the 3 day mobilization, the volunteer may be rotated in at a later date.

In the event of a catastrophic disaster, the volunteers will be needed to assist state and local jurisdictions and local building inspectors in the evaluation of affected essential buildings and characterize their condition as:

1) **Having not sustained serious damage and may be occupied**
2) **Requiring temporary vacate pending a detailed evaluation by a qualified professional; *or***
3) **Deemed unsafe for occupancy**

It should be noted that the scope of the on-the-spot evaluation deals primarily with structural safety, but also considers other hazards (e.g. downed power lines, broken sewer lines, blocked fire exits) should those be encountered. Unless otherwise specified, any person utilized as a volunteer under the IN-SAVE program will have their incidental expenses paid by the state. The paid expenses include travel, lodging and per-diem, film or other necessary expenses.

Protection from liability for volunteers and their employers is provided through Indiana Emergency Management and Disaster Laws ***(I.C. 10-14-3)***. Architects and professional engineers working under IDHS in the IN-SAVE Coalition serve as emergency management workers ***(I.C. 10-14-3-3)*** performing a governmental function of the state and are not liable either jointly or separately for any act or acts, including the death of or injury to persons or for damage to property as a result of any such activity, committed in the performance of their official duties as IN-SAVE volunteers, except in the case of willful misconduct, gross negligence, or bad faith ***(I.C. 10-14-3-15)***. The assessment and evaluation opinions and conclusions expressed by the employee while serving as an activated IN-SAVE volunteer are solely those of the employee and do not reflect the sentiments of their employer.

Individuals participating in the IN-SAVE Coalition will be covered under the State of Indiana Worker's Compensation coverage for rostered volunteers ***(I.C. 22-3-2-2.1)***.

IN-SAVE Coalition volunteers their services to the Indiana Department of Homeland Security with all the understanding that all requests for volunteer assessments will be made through IDHS. Therefore, persons participating in the IN-SAVE Coalition will not make individual arrangements for volunteer services with local or state jurisdictions unless coordinated by IDHS. This is in no way to limit or restrict normal business relationships or contracts between professional, local governments or private clients.

In the event of a disaster that would require the response of volunteers, there will be an obvious need to assess other types of structures. The entities responsible for those structures' construction and maintenance will have this responsibility. The Indiana Department of Transportation and local highway and street departments will have the responsibility to inspect roads and bridges. The inspection of utility lines, pipelines, sewage and water line systems, and railroad and airport facilities will be the responsibility of their respective owners/managers. The United States Army Corps of Engineers and the Indiana Department of Natural Resources will inspect dams, levees and reservoirs.

IDHS has agreed that volunteers' names or business affiliations will not appear on released copies of assessment forms; neither will their names be identified or released in relation to specific assessment reports without prior approval of the volunteer and their employer, unless requested by the Indiana State Attorney General or court order.

2.0 MOBILIZATION AND COORDINATION

2.1 Organizational Structure and Responsibilities

County (District) Jurisdictions:
Each County (District) Jurisdiction will appoint a person, such as a building inspector or engineer, as a local on-site coordinator, hereafter referred to as **Local Coordinator**, which will serve as a link between IN-SAVE volunteers and local authorities requesting inspection services. County and local jurisdictions (Emergency Services, Police, etc.) will be responsible for providing safe and clear access for IN-SAVE Teams to affected areas. Local emergency services will be provided to IN-SAVE Teams as needed. Local Coordinators will designate a staging area for IN-SAVE Teams.

IDHS:
The Indiana State Building Commissioner serves as a statewide coordinator for the IN-SAVE program, referred to as **State Coordinator**. The **On-Site Team Coordinators** will be IDHS representatives and responsible for tracking, briefing and debriefing, team coordination, issuing assignments and sending volunteers into the field. The On-Site Team Coordinators are to be used primarily for large scale disasters, as determined by IDHS. The **Team Leaders** will serve as and assume the responsibilities of the On-Site Team Coordinator during all other disasters determined not to be of a large scale by IDHS. Team Leaders will be IDHS representatives and will also be responsible with record keeping and assisting in handling requests for reimbursement of expenses incurred by their IN-SAVE Teams. IDHS will provide necessary coordination, funding and reimbursement to support the activities of the IN-SAVE Teams.

Volunteers:
IN-SAVE inspectors will be Professional Engineers (I.C. 25-31), Architects (I.C. 25-4-1) and other individuals qualified by training and experience who have completed an Enhanced Version of the Applied Technology Council–20 (ATC-20) Safety Evaluation of Buildings and have been rostered by IDHS. Qualified and trained inspectors will be designated as **Team Leader**, **Structural Inspector**, **Specialty Inspector, General Inspector** and **Trainee**. Description as follows:

- **Team Leader**: IDHS individual or other qualified individual with special training directly through IDHS.
- **Structural Inspector**: Registered Professional Engineer with a minimum of 5 years of experience in structural work and

expertise in structures; enhanced ATC-20 graduate and application on file with IDHS.

- **Specialty Inspector**: Registered Professional Engineer or Registered Architect; enhanced ATC-20 graduate and application on file with IDHS.
- **General Inspector**: Bachelor's degree from an accredited Civil Engineering Program; enhanced ATC-20 graduate and application on file with IDHS.
- **Trainee**: enhanced ATC-20 Graduate and application on file with IDHS.

Figure 1 illustrates the hierarchy of communication and command that is to be utilized for the activation of the IN-SAVE Coalition volunteers.

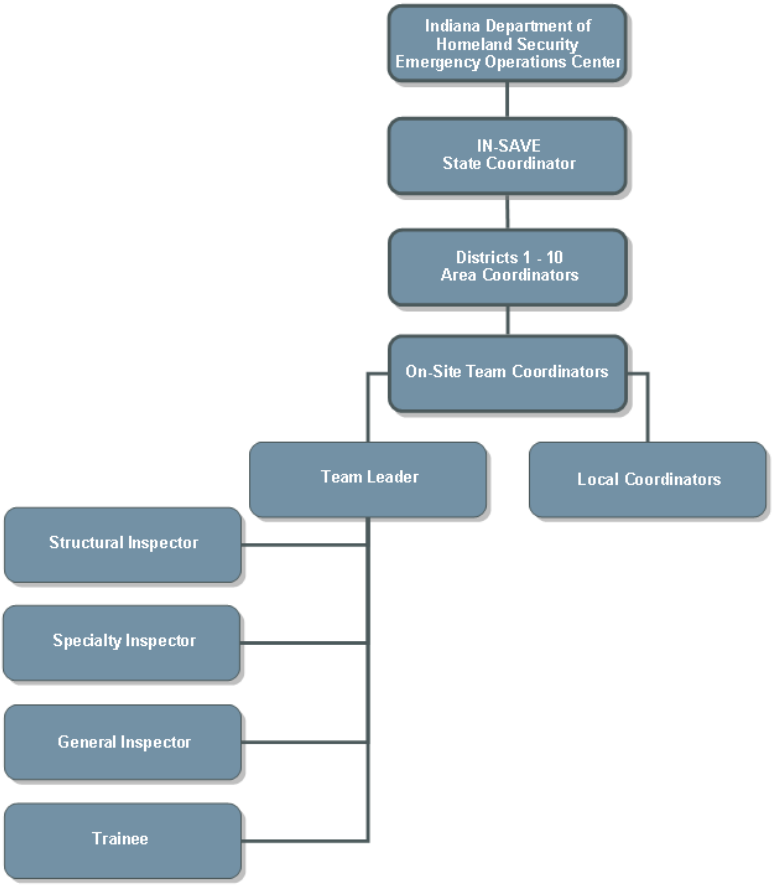


Figure 1. IN-SAVE Organizational Chart

The **Area Coordinators** identified in the hierarchy preside over each of the designated IN-SAVE and Homeland Security districts. IN-SAVE is composed of 10 districts, as shown in Figure 2. These districts follow the same designations as the IDHS districts, which are organized on the basis of populations.

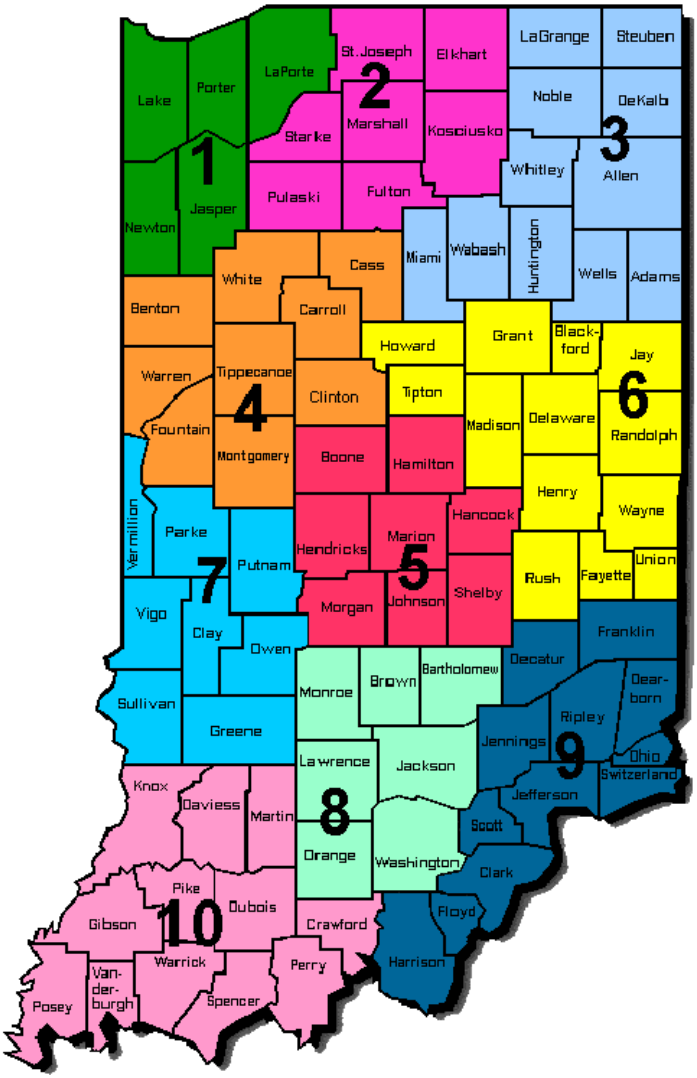


Figure 2. Homeland Security District Map

2.2 Activation and Deployment

Following a catastrophic event, the County (District) Emergency Management Agency will request the need for inspectors from the IDHS Emergency Operations Center (EOC). The EOC will review the request and determine the need for the activation of IN-SAVE volunteers. The State Coordinator or their designated alternate, upon request from the IDHS EOC or in the anticipation of a request, or upon occurrence of a natural or man-made disaster, will request the Area Coordinators or their designated alternate, to poll rostered volunteers to determine their availability for deployment.

The following procedures in Figure 3 are to be followed by the local jurisdictions and IDHS in the activation of the IN-SAVE volunteers.

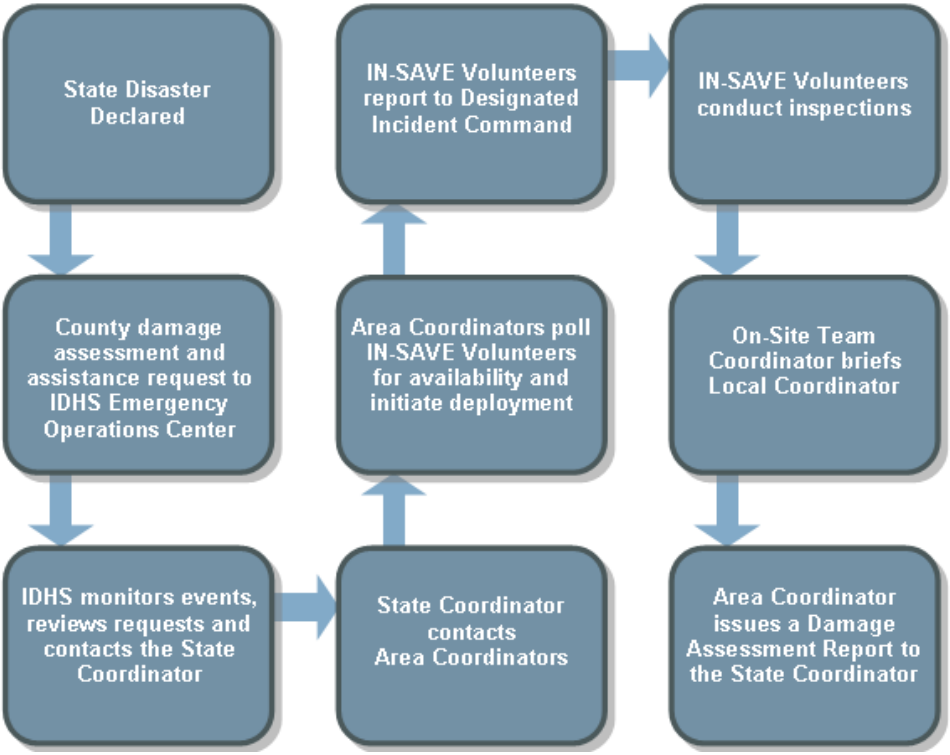


Figure 3. Mobilization Notification and Coordination

Upon activation of the IN-SAVE Coalition, the volunteer is contacted by the Area Coordinator. When the volunteer agrees to be deployed, he/she is expected to:

- □ Provide a cell phone number and other means to be contacted.
- □ Write down the provided instructions: date, time, location, and contact person.
- □ Obtain maps and other pertinent information on the area from the Internet or a library, if necessary.
- □ Travel safely to the Designated Incident Command (staging area). Be prepared to show IN-SAVE identification at official road stops.
- □ Sign in at the Designated Incident Command, check in with the On-Site Team Coordinator, and attend initial briefings.
- □ Obtain team assignment with other volunteers and/or local building inspectors. Do not go into the field alone!
- □ Obtain IDHS "To-Go Kit" (see page 9), from the Team Leader.
- □ Arrange carpool and travel to assignment. Evaluate a structure together as a group and discuss the issues and procedures in order to get everyone "on the same page".
- □ For each structure, follow the procedure for safety evaluation, and arrive at a team consensus of how the structure should be posted.
- □ Write all pertinent information on the placards and post the structure at every entrance.
- □ Write the identical information on the Assessment Form for each structure and retain the form for the local jurisdiction's records.
- □ Upon completion of the assignment, return to the designated deployment center.
- □ Attend debriefing with other team members and local officials, review the Assessment Forms for completeness, and give them to the On-Site Team Coordinators.
- □ Sign out at the end of the work day.
- □ If needed the following day, proceed to evening arrangements and return the next day to obtain assignments and more materials as needed.
- □ If the volunteer is no longer needed, then proceed with demobilization.
- □ Hand in all government equipment and materials.
- □ Complete any leftover issues at the final debriefing.
- □ Round up all personal items and receipts.
- □ Perform procedure for travel and other extraordinary expense reimbursements.
- □ Return home as safety permits.

The **On-Site Team Coordinator or Team Leader** depending on the scale of the event, in regards to the deployment of the IN-SAVE volunteers, is required to:

- □ Have them sign in at the staging area.
- □ Hand out briefing packets.
- □ Brief them on the nature and extent of the disaster, and any hazards or other issues they should be aware of.
- □ Assign them into teams of at least two, usually one building inspector and at least one architect or engineer.
- □ Assign a helper who knows the area to drive them, if this is the preferred arrangement.
- □ Assign the teams their evaluation assignments (map cards or lists of properties) for the day. Be sure there is enough work for a team to have a full day of work.
- □ Instruct them to return for team debriefings at the end of the day, otherwise, search and rescue teams may be deployed to find them.
- □ Send IN-SAVE volunteers to the field.

After deployment, and the volunteer's service is no longer requested, the volunteer is advised to:

- □ Submit to the Team Leader the travel expense paperwork for unreimbursed meals and travel, using the form provided in the Briefing Packet and/or during demobilization.
- □ Examine their personal to-go-kit and re-stock any depleted items.
- □ Contact their professional organization's contact person to inform them of their deployment completion, and their redeployment availability, if necessary, in the aftermath of a large disaster event.
- □ Continue to ensure that their professional organization has their updated contact information at all times.

2.3 Individual Equipment Preparedness

Successful and efficient inspections require the availability of essential equipment for inspectors. Each IN-SAVE volunteer is asked to bring with them as many of the below items as possible. Replacement of lost or damaged equipment will be the responsibility of the requesting state or local jurisdiction. Each person is urged to have these items readily available on short notice. Special circumstances and personal preferences may dictate other choices to the following suggested items.

Recommended Personal Items (provided by the volunteer):

Water bottle	Cell phone w/ charger	Money
Work boots	Extra eyeglasses	Sunglasses
Sun screen	Hand sanitizer/wipes	Driver's license
Medications	Extra clothing	Insect repellant
Towel	Personal hygiene	

To-Go Kit (provided by IDHS):

IN-SAVE I.D. card	ATC-20 field manual
IN-SAVE hard hat	Safety glasses
Gloves	IN-SAVE safety vest
Binoculars	Dust mask
Clipboard	Duct tape
ATC-20 Assessment Forms	Placards
Caution/Barricade Tape	Flashlight w/ extra batteries
Camera	Maps
Poncho	First Aid

Assorted tools:

Hammer, crescent wrench, pliers,
Plumb bob, levels, screw drivers,
Wire cutters, tape measure, knife

3.0 BUILDING SAFETY EVALUATION PROCEDURE

3.1 Overview

Following an earthquake, wind, fire, flooding event or man-made disaster; there are three main safety concerns for damaged buildings:

1) **Collapse, overall or partial, due to the loss of strength, stability, or stiffness of the structure's frame or walls.**
2) **Falling hazard of nonstructural building elements.**
3) **Other hazards; including unusable stairs or doors, chemicals and flammables could fall of shelves; broken gas pipes; shock hazards from broken electrical equipment; materials containing asbestos.**

IN-SAVE volunteers have the education and experience in building construction to assess the risk from the observed damaged. The basic approach for the IN-SAVE volunteer is to look for expected and predictable damage, but because every disaster is different, always look for unexpected damage.

IN-SAVE's primary responsibility will be to perform ATC-20 Rapid Evaluations of buildings that have been designated as essential facilities by IDHS. In some jurisdictions, the IN-SAVE volunteers may be asked to assist the local jurisdiction officials with respect to the Windshield Evaluations to determine extent and location of damage, as well as, to quickly designate the apparently safe and the clearly unsafe structures and to further identify structures for the subsequent Rapid Evaluation by IN-SAVE teams.

The priority level of essential buildings will be determined by IDHS and will include, but not be limited to, the following:

- **Emergency Operations Centers**
- **Triage Hospitals**
- **Hospitals**
- **EMS/Rescue/Fire Departments**
- **Government Facilities**
  - INDOT Facilities
  - State/County Offices
- **Communications**
  - Emergency Broadcast Facilities
  - Information and Coordination
- **Police/Sheriff/Law Enforcement**
- **Emergency and Special Needs Shelters**
- **Medical Clinics**

- **School Buildings**
- **Public Aviation Facilities**
- **Nursing Home Facilities**

The ATC-20 guidelines for the rapid screening of these essential buildings is necessarily coarse and designed to look for readily observable, gross kinds of structural distress and geotechnical conditions that threaten building safety. The procedure for such evaluations is summarized in Figure 4.

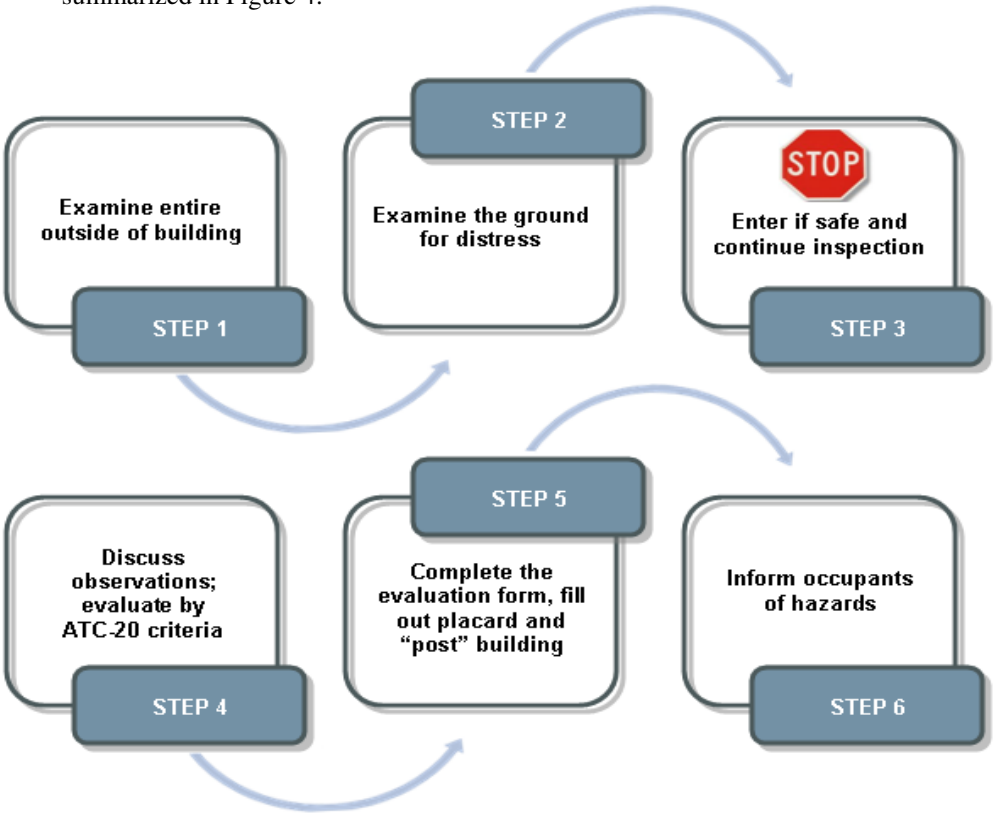


Figure 4. Basic Evaluation Process

Based on visual evaluations, buildings will be posted with placards indicating the damage category. Requirements associated with the posting will be determined by the affected jurisdiction.

3.2 Placard Posting System

After a facility has been evaluated, a placard must be used to provide notice to owners, occupants and the public about its condition. Posting of placards by volunteers represents a recommendation only and is not intended to be a substitute for action by local officials. If the local jurisdiction wants the volunteers to make official postings, they must be deputized as local building inspectors. Refer any dispute to the On-Site Team Coordinator and local official.

Inspectors must be careful to post placards where they can easily be seen. However, inspectors also must be careful that they do not endanger themselves when placing placards; for example, not to step on a porch that is in danger of collapsing.

Placards are designated either INSPECTED, RESTRICTED USE or UNSAFE. Each placard corresponds to a category and is visibly identifiable with a distinctive color, as shown in Figures 5, 6 and 7:

Figure 5. Green Placard - Category 1

Figure 6. Yellow Placard - Category 2

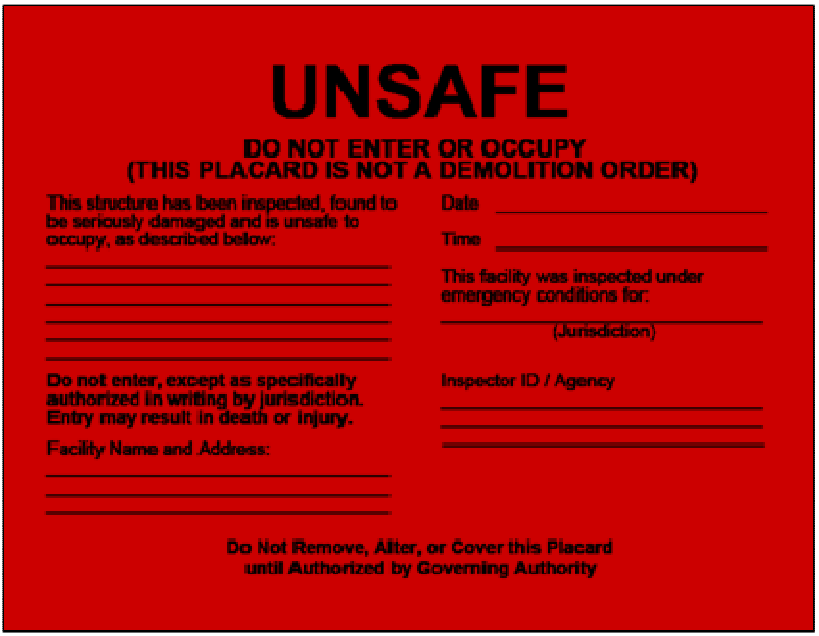


Figure 7. Red Placard - Category 3

Category 1:
"INSPECTED" indicates that the damage observed does not pose a safety risk for entry or occupancy of the structure. No apparent hazard found, although repairs may be required. Lawful entry, occupancy and use permitted.

Category 2:
"RESTRICTED USE" indicates apparent damage, but the extent of the damage cannot be readily evaluated. Supervised limited entry may be granted only by special permission of the local jurisdiction. Usage on a continuous basis is prohibited; building is not to be occupied prior to re-inspection and evaluation.

Category 3:
"UNSAFE" indicates an extreme hazard, structure may collapse. The extent of the damage is obviously severe and dangerous and the building is unsafe for occupancy or entry, except by authorities.

The posting process should be conducted in a timely manner, consistent and visible. All placards will be posted with the address of the structure and the date and time of the evaluation. UNSAFE and RESTRICTED USE placards should be at every entrance. Figure 8 on page 15 outlines the system for posting placards.

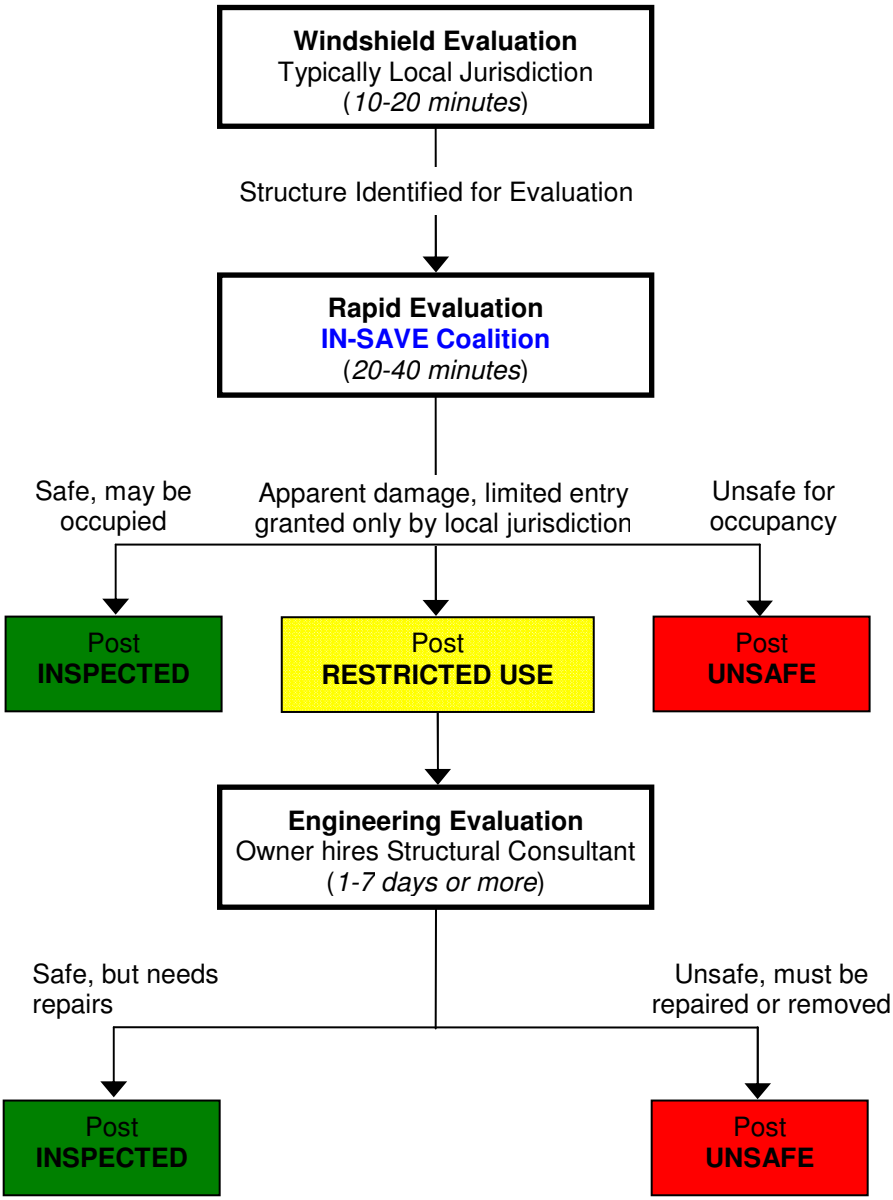


Figure 8. Posting of Placards System

3.3 Assessment Forms

Standard ATC-20 forms for assessing the safety and operational capability of buildings have been developed. These forms, when completed, together with any pictures, sketches or drawings, will be used to provide an accurate report of the volunteer's assessments. The forms shown in Appendix B are examples of what is to be used, unless other forms have been coordinated and accepted by the IN-SAVE Advisory Board. IN-SAVE volunteers should not make recommendations relating to the repair or demolition of any structure. Specific recommendations relating to demolition or feasibility of repair are the responsibility of the local jurisdiction and will not be reported on the assessment forms. Requests from the building owners for copies of the completed assessment forms will be referred to the local jurisdiction. Completed forms will be given to the Team Leader.

The On-Site Team Coordinator will assign report numbers to all assessment reports in the upper right hand corner of each page. This number should also be entered on all photos, sketches, etc. for that facility. All documents must be traced to their proper assignments. The assessment report number will be assigned as follows:

1. The first number will be the number that pertains to that county, (i.e. for Adams County, 1-0000)
2. The second number will be sequential

A summary of inspections log, by address of each building evaluated, will be maintained by each volunteer Team Leader and submitted daily to the On-Site Team Coordinator. The On-Site Team Coordinator will then provide a copy to the local jurisdiction Area Coordinator. The Area Coordinator will log a copy of the reports at the end of each 3-day volunteer's rotation with the State Coordinator.

Please refer to the ATC 20-1 Field Manual, provided by IDHS, for a more detailed description of the evaluation process, placard posting system and the completion of assessment forms.

3.4 Safety Awareness

Inspectors must be aware of their own safety, and that of their team members, at all times. Remember the following safety reminders:

1. Always travel in teams of at least two people.

2. Always wear a hard hat, which will be provided by IDHS.
3. Survey the building exterior completely before entering.
4. Do not enter obviously unsafe buildings.
5. Avoid all areas where a hazardous material release is suspected or confirmed.
    a. Leave, seal off, if possible, and post any area where a chemical spill or asbestos contamination is suspected.
    b. Notify the local fire department or, if unavailable, the local Office of Emergency Services (or equivalent). If possible, make note of the chemical name or any markings on the container.
6. Be alert for falling debris.
7. In case of fire, evacuate the area and alert the fire department immediately.
8. Avoid downed power lines and buildings under them.
9. In case of gas leaks, shut of the gas (if possible and safe) and report the leak.

Human factors regarding occupants and owners following a disaster also need to be considered. The following tips can help generate quicker and more efficient inspections:

1. There may be owners or occupants who are suspicious and reluctant to cooperate. These individuals should be dealt with in an objective, factual and patient manner. If there is reason to believe that the structure may have suffered damage and entry to the structure is refused, the building should be posted and authorities contacted.
2. Evidence of owner concern about the meaning of placards should be addressed through clear communication. When it is necessary to post a building or area UNSAFE, (e.g., collapse hazard) the reasons for this should be explained to those affected.
3. IN-SAVE volunteers should conduct themselves in an empathetic and professional manner whenever they encounter local residents impacted by the event. IN-SAVE volunteers should be prepared to direct people to available assistance (e.g., food, shelter, medical, crisis counseling).

Glossary of Terms

ACEC – American Council of Engineering Companies of Indiana

AIA – American Institute of Architects, Indiana Chapter

Area Coordinator – An IDHS appointed employee who serves as point of contact between State Coordinator and volunteers in a geographical area

ASCE – American Society of Civil Engineers, Indiana Chapter

ATC-20 – Applied Technology Council - 20, Post Earthquake Safety Evaluation of Buildings

EOC – Emergency Operations Center

Essential Facilities – Critical facilities to be evaluated by IN-SAVE volunteers, as defined by the Indiana Department of Homeland Security and Federal Emergency Management Agency guidelines.

FEMA – Federal Emergency Management Agency

General Inspector – A qualified volunteer with a Bachelor's degree from an accredited Civil Engineering Program and enhanced ATC-20 graduate with an application on file with IDHS.

I.C. – Indiana Code

IDHS – Indiana Department of Homeland Security

IN-SAVE – Indiana Structural Assessment and Visual Evaluation

IN-SAVE Advisory Board – This Advisory Board is made up of representatives from Purdue University Department of Civil Engineering, IDHS, ASCE, AIA, ACEC, ISPE, ISEA and Structural Engineers from the private sectors, which oversee the development, training and implementation of the IN-SAVE Program.

ISEA – Indiana Structural Engineers Association

ISPE – Indiana Society of Professional Engineers

Local Coordinator – The individual designated by the local jurisdiction as its point of contact between the local government and the IN-SAVE On-Site Team Coordinator.

Local Jurisdiction – A county, city, town or village in the State of Indiana

Man-Made Disaster – Disaster that results from events other than natural causes, such as explosion, terrorism or other human caused events

Natural Disaster – Disaster that results from earthquake, flood, fire, wind or other natural causes

On-Site Team Coordinator – An IDHS representative designated by the State Coordinator to serve as interface between inspection teams, Team Leaders and Local Coordinator or other local officials during a large scale disaster

Rapid Evaluation – The simplest, first level of examination and is designed to quickly designate the apparently safe and obviously unsafe structures.

Specialty Inspector – Registered Professional Engineer or Registered Architect and enhanced ATC-20 graduate on file with IDHS.

State Coordinator – The State Building Law Compliance Officer (State Building Commissioner) will serve as a statewide coordinator, referred to as State Coordinator. The representative will serve as contact between IDHS and the IN-SAVE Coalition volunteers.

Structural Inspector – Registered Professional Engineer with a minimum of 5 years of experience in structural work and expertise in structures; enhanced ATC-20 graduate and application on file with IDHS.

Team Leader – IDHS individual or other qualified individual with special training directly through IDHS who serves as and assumes the responsibilities of the On-Site Team Coordinator during disaster events determined to not be of a large scale by IDHS.

Trainee – A qualified volunteer enhanced ATC-20 graduate and application on file with IDHS.

Volunteers – Engineers registered under I.C. 25-31 and Architects registered under I.C. 25-4-1 and other individuals qualified by training and experience, who have received required training and have been rostered by IDHS

Windshield Evaluation – Evaluation done typically by local jurisdiction by driving up and down the streets immediately following a disaster to quickly determine the scope of the damage in the community.

ATC-20 Rapid Evaluation Safety Assessment Form

Inspection

Inspector ID: _____ Inspection date and time: _____ ☐ AM ☐ PM

Affiliation: _____ Areas inspected: ☐ Exterior only ☐ Exterior and interior

Building Description

Building name: _____

Address: _____

_____

Building contact/phone: _____

Number of stories above ground: _____ below ground: _____

Approx. "Footprint area" (square feet): _____

Number of residential units: _____

Number of residential units not habitable: _____

Type of Construction

☐ Wood frame ☐ Concrete shear wall

☐ Steel frame ☐ Unreinforced masonry

☐ Tilt-up concrete ☐ Reinforced masonry

☐ Concrete frame ☐ Other: _____

Primary Occupancy

☐ Dwelling ☐ Commercial ☐ Government

☐ Other residential ☐ Offices ☐ Historic

☐ Public assembly ☐ Industrial ☐ School

☐ Emergency services ☐ Other: _____

Evaluation

Investigate the building for the conditions below and check the appropriate column.

Observed Conditions:	Minor/None	Moderate	Severe	Estimated Building Damage (excluding contents)
Collapse, partial collapse, or building off foundation	☐	☐	☐	☐ None
Building or story leaning	☐	☐	☐	☐ 0–1%
Racking damage to walls, other structural damage	☐	☐	☐	☐ 1–10%
Chimney, parapet, or other falling hazard	☐	☐	☐	☐ 10–30%
Ground slope movement or cracking	☐	☐	☐	☐ 30–60%
Other (specify) _____	☐	☐	☐	☐ 60–100%
				☐ 100%

Comments: _____

_____

Posting

Choose a posting based on the evaluation and team judgment. *Severe* conditions endangering the overall building are grounds for an Unsafe posting. Localized *Severe* and overall *Moderate* conditions may allow a Restricted Use posting. Post INSPECTED placard at main entrance. Post RESTRICTED USE and UNSAFE placards at all entrances.

☐ **INSPECTED** (Green placard) ☐ **RESTRICTED USE** (Yellow placard) ☐ **UNSAFE** (Red placard)

Record any use and entry restrictions exactly as written on placard: _____

_____

_____

Further Actions

Check the boxes below only if further actions are needed.

☐ Barricades needed in the following areas: _____

_____

☐ Detailed Evaluation recommended: ☐ Structural ☐ Geotechnical ☐ Other: _____

☐ Other recommendations: _____

Comments: _____

_____

ATC-20 Detailed Evaluation Safety Assessment Form

Inspection

Inspector ID: _____

Affiliation: _____

Inspection date and time: _____ ☐ AM ☐ PM

Final Posting

from page 2

☐ Inspected
☐ Restricted Use
☐ Unsafe

Building Description

Building name: _____

Address: _____

_____

Building contact/phone: _____

Number of stories above ground: _____ below ground: _____

Approx. "Footprint area" (square feet): _____

Number of residential units: _____

Number of residential units not habitable: _____

Type of Construction

☐ Wood frame
☐ Steel frame
☐ Tilt-up concrete
☐ Concrete frame
☐ Concrete shear wall
☐ Unreinforced masonry
☐ Reinforced masonry
☐ Other: _____

Primary Occupancy

☐ Dwelling
☐ Other residential
☐ Public assembly
☐ Emergency services
☐ Commercial
☐ Offices
☐ Industrial
☐ Other: _____
☐ Government
☐ Historic
☐ School

Evaluation

Investigate the building for the conditions below and check the appropriate column. There is room on the second page for a sketch.

	Minor/None	Moderate	Severe	Comments
Overall hazards:				
Collapse or partial collapse	☐	☐	☐	_____
Building or story leaning	☐	☐	☐	_____
Other_____	☐	☐	☐	_____
Structural hazards:				
Foundations	☐	☐	☐	_____
Roofs, floors (vertical loads)	☐	☐	☐	_____
Columns, pilasters, corbels	☐	☐	☐	_____
Diaphragms, horizontal bracing	☐	☐	☐	_____
Walls, vertical bracing	☐	☐	☐	_____
Precast connections	☐	☐	☐	_____
Other_____	☐	☐	☐	_____
Nonstructural hazards:				
Parapets, ornamentation	☐	☐	☐	_____
Cladding, glazing	☐	☐	☐	_____
Ceilings, light fixtures	☐	☐	☐	_____
Interior walls, partitions	☐	☐	☐	_____
Elevators	☐	☐	☐	_____
Stairs, exits	☐	☐	☐	_____
Electric, gas	☐	☐	☐	_____
Other_____	☐	☐	☐	_____
Geotechnical hazards:				
Slope failure, debris	☐	☐	☐	_____
Ground movement, fissures	☐	☐	☐	_____
Other	☐	☐	☐	

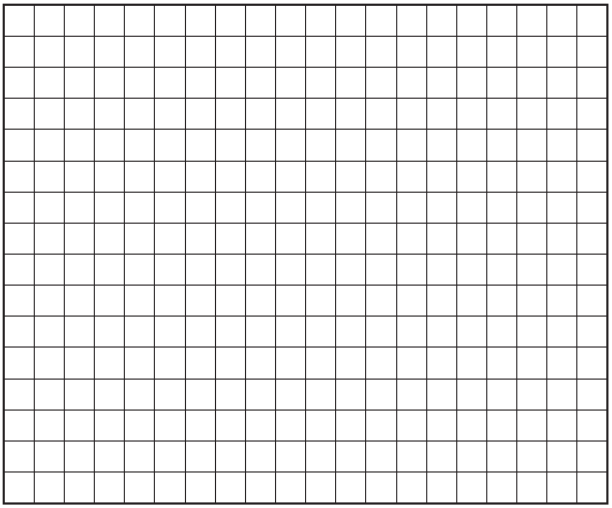
General Comments: _____

_____

ATC-20 Detailed Evaluation Safety Assessment Form Page 2

Building name: _____ Inspector ID: _____

Sketch (optional)
Provide a sketch of the building or damaged portions. Indicate damage points.



Estimated Building Damage
If requested by the jurisdiction, estimate building damage (repair cost ÷ replacement cost, excluding contents).

- ☐ None
- ☐ 0–1%
- ☐ 1–10%
- ☐ 10–30%
- ☐ 30–60%
- ☐ 60–100%
- ☐ 100%

Posting
If there is an existing posting from a previous evaluation, check the appropriate box.

Previous posting: ☐ INSPECTED ☐ RESTRICTED USE ☐ UNSAFE Inspector ID: _____ Date: _____

If necessary, revise the posting based on the new evaluation and team judgment. *Severe* conditions endangering the overall building are grounds for an Unsafe posting. Local *Severe* and overall *Moderate* conditions may allow a Restricted Use posting. Indicate the current posting below and at the top of page one.

☐ **INSPECTED** (Green placard) ☐ **RESTRICTED USE** (Yellow placard) ☐ **UNSAFE** (Red placard)

Record any use and entry restrictions exactly as written on placard: _____

Further Actions Check the boxes below only if further actions are needed.

☐ Barricades needed in the following areas: _____

☐ Engineering Evaluation recommended: ☐ Structural ☐ Geotechnical ☐ Other: _____

☐ Other recommendations: _____

Comments: _____

ATC-20 Fixed Equipment Checklist

Building Description

Building name: _____

Address: _____

_____

Inspection

Inspector ID: _____

Affiliation: _____

Inspection date: _____

Inspection time: _____ ☐ AM ☐ PM

Checklist	Equipment Damaged			
Overall hazards:	Minor/None	Moderate	Severe	Comments
Main boilers	☐	☐	☐	
Chillers	☐	☐	☐	
Emergency generators	☐	☐	☐	
Fuel tanks	☐	☐	☐	
Battery racks	☐	☐	☐	
Fire pumps	☐	☐	☐	
On-site water storage	☐	☐	☐	
Communications equipment	☐	☐	☐	
Main transformers	☐	☐	☐	
Main electrical panels	☐	☐	☐	
Elevators (traction)	☐	☐	☐	
Other fixed equipment				
_____	☐	☐	☐	
_____	☐	☐	☐	
_____	☐	☐	☐	
_____	☐	☐	☐	
_____	☐	☐	☐	
_____	☐	☐	☐	
Special concerns for hospitals and other health care facilities				
Radiation equipment	☐		☐	
Toxic chemical storage				
_____	☐	☐	☐	
_____	☐	☐	☐	
_____	☐	☐	☐	
_____	☐	☐	☐	
Liquid oxygen tanks	☐	☐	☐	
Other: _____	☐	☐	☐	
_____	☐	☐	☐	

Recommendations/Comments: _____

ATC, 1989, *Procedures for Postearthquake Safety Evaluations of Buildings,* Applied Technology Council Report ATC-20, Redwood City, California

ATC, 1989, *Field Manual: Postearthquake Safety Evaluations of Buildings,* Applied Technology Council Report ATC-20-1, Redwood City, California

ATC, 1993, *Postearthquake Safety Evaluations of Buildings Training Manual,* Applied Technology Council Report ATC-20-T, Redwood City, California

State of California - Governor's Office of Emergency Services, 2005, *JOB AID - Safety Assessment Program Evaluator,* SAP Job Aids, Sacramento, CA

State of California - Governor's Office of Emergency Services, 2006, *JOB AID - Safety Assessment Program SAP Coordinator,* SAP Job Aids, Sacramento, CA

State of California - Governor's Office of Emergency Services, 2007, *Safety Assessment Program (SAP) Frequently Asked Questions*, SAP FAQ, Sacramento, CA

State of Missouri Emergency Management Agency Earthquake Program, 2004, *Administration and Operations Plan for the S.A.V.E. Coalition,* Structural Assessment and Visual Evaluation of Buildings and Vertical Structures, Jefferson City, MO

Notes:

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